

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Inventors : Russell F. Durgin et al.
Serial No. : To be assigned
Filed : November 18, 1999
For : APPARATUS AND METHOD FOR COMPRESSING
BODY TISSUE
Group Art Unit : To be assigned (3731 Anticipated)
Examiner : To be assigned (G. Jackson Anticipated)

Assistant Commissioner for Patents
Washington, D.C. 20231

PRELIMINARY AMENDMENT

SIR:

Applicants respectfully request that this Preliminary Amendment be entered in the above-identified application before examination of the application. The Commissioner is hereby authorized to charge payment of any required fees in connection with this Amendment to Kenyon & Kenyon's Deposit Account No. 11-0600.

IN THE SPECIFICATION:

Please amend the specification as follows:

Page 1, add as the first paragraph after the Title, the following paragraph:

RELATED APPLICATIONS

This is a Continuation of U.S. Serial Number 09/443,219, filed on November 18, 1999, titled Apparatus and Method for Compressing Body Tissue.

IN THE CLAIMS

Please cancel claims 1-49 without disclaimer of or prejudice to the subject matter contained therein.

Please add new claims as follows.

50. (New) A system for delivering a surgical clip to a surgical site within a patient's body to compress body tissue, comprising:
- an endoscopic device;
 - an endoscope cap disposed on a distal end of said endoscopic device;
 - a surgical clip removably disposed on an outside surface of said endoscope cap and having a potential energy transformable into energy for grasping tissue when said surgical clip is deployed; and
 - a deployment device associated with said surgical clip.

51. (New) The system of claim 50 further comprising a tissue grasping device disposed through said endoscopic device.

52. (New) The system of claim 50 wherein said outside surface of said endoscopic cap is treated to reduce a frictional force between said outside surface and said surgical clip.

53. (New) The system of claim 51 wherein said tissue grasping device comprises at least one spring-formed J-shaped barb.

54. (New) The system of claim 50 wherein said deployment device comprises a cable attached at a first end to said surgical clip.

55. (New) The system of claim 50 wherein said deployment device comprises a tubular member disposed around said endoscopic device and adapted to deploy said surgical clip.

56. (New) The system of claim 50 wherein said deployment device comprises a balloon disposed between said endoscope cap and said surgical clip.

57. (New) The system of claim 50 wherein said deployment device comprises:
a force generator disposed around said endoscopic device and including:
an engagement member at least partially disposed within said force generator and movable between a first position where said engagement member does not deploy said surgical clip off of said endoscope cap and a second position where said engagement member deploys said surgical clip; and
an actuator operably associated with said engagement member.

58. (New) The system of claim 57 wherein said actuator is a compression spring.

59. (New) The system of claim 58 further comprising a retention spring disposed around a portion of said engagement member and biasing said engagement member in said first position.

60. (New) The system of claim 57 wherein said actuator is a pressurized chamber and wherein said force generator includes a first seal disposed between a piston included on said engagement member and an inside wall of said force generator and a second seal disposed between said piston and an outside wall of said force generator.

61. (New) The system of claim 57 wherein said actuator is an electrical coil.

62. (New) The system of claim 50 further comprising a balloon disposed between said endoscope cap and said surgical clip and wherein a portion of said balloon proximal to said surgical clip impels a distal motion of said surgical clip with respect to said endoscope cap.

63. (New) The system of claim 50 further comprising a foam member disposed on said endoscope cap, a portion of said foam member which is located proximal to said surgical clip deploys said surgical clip.

64. (New) The system of claim 50 wherein said surgical clip is in a martensite phase when said surgical clip is disposed on said outside surface of said endoscope cap.

65. (New) The system of claim 64 further comprising a heating element associated with said surgical clip.

66. (New) The system of claim 50 wherein said surgical clip is in an austenite phase when said surgical clip is disposed on said outside surface of said endoscope cap.

67. (New) The system of claim 50 when said surgical clip is comprised of a shape-memory alloy.

68. (New) The system of claim 50 when said surgical clip is comprised of a shape-memory polymer.

69. (New) The system of claim 50 when said surgical clip is comprised of a shape-memory composite.

70. (New) The system of claim 50 when said surgical clip is comprised of spring steel.

71. (New) The system of claim 50 when said surgical clip is comprised of titanium.

72. (New) The system of claim 50 when said surgical clip is comprised of a high-yield polymer.

73. (New) The system of claim 50 wherein a plurality of surgical clips is disposed on said outside surface of said endoscope cap.

74. (New) The system of claim 50 wherein said surgical clip comprises a plurality of grasping surfaces suitable for penetrating a submucosa of the body tissue.

75. (New) The system of claim 74 wherein said grasping surfaces are connected by a plurality of joints.

76. (New) The system of claim 75 wherein said joints are formed in a figure eight configuration.

77. (New) The system of claim 75 wherein each of said joints further comprises an extension spring.

78. (New) The system of claim 75 wherein each of said joints further comprises a hinge point.

79. (New) The system of claim 77 wherein the extension springs control a majority of the energy when the surgical clip is deployed.

80. (New) The system of claim 78 wherein each hinge point is notched.

81. (New) The system of claim 78 wherein each hinge point is formed as a pinned pivot point.

82. (New) The system of claim 75 wherein each of said joints further comprises a torsion spring.

83. (New) The system of claim 82 wherein each of said joints further comprises a pinned pivot point.

84. (New) The system of claim 75 wherein said joints store the potential energy mechanically.

85. (New) The system of claim 75 wherein said joints store the potential energy according to a material process.

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86. (New) A method for delivering a surgical clip to a surgical site within a patient's body to compress body tissue, comprising the steps of:

disposing a surgical clip on an outside surface of an endoscope cap such that the clip is in an austenite phase, said endoscope cap disposed on a distal end of an endoscopic device;

deploying said endoscopic device to a site within the patient's body such that said surgical clip is positioned proximate to the body tissue to be compressed;

drawing the body tissue within said endoscope cap; and

deploying said surgical clip from said outside surface of said endoscope cap such that the tissue grasping surfaces move near one another.

87. (New) The method of claim 86 wherein said step of drawing the body tissue within said endoscope cap comprises the step of applying a suction through said endoscopic device to said body tissue.

88. (New) The method of claim 86 wherein said step of drawing the body tissue within said endoscope cap comprises the steps of:

grasping the body tissue with a grasping device; and

pulling the body tissue into said endoscope cap.

89. (New) The method of claim 88 wherein said step of grasping the body tissue with a grasping device comprises the step of screwing a distal end of a threaded tool into the body tissue.

90. (New) The method of claim 88 wherein said step of grasping the body tissue with a grasping device comprises the step of inserting at least one spring-formed, J-shaped barb into the body tissue.

91. (New) The method of claim 86 wherein said step of deploying said surgical clip from said outside surface of said endoscope cap comprises the step of pulling a second end of a cable in a proximal direction wherein a first end of said cable is attached to said surgical clip.

92. (New) The method of claim 86 wherein said step of deploying said surgical clip from said outside surface of said endoscope cap comprises the step of pushing a tubular member disposed around said endoscopic device to push said surgical clip off of said endoscope cap.

93. (New) The method of claim 86 wherein said step of deploying said surgical clip from said outside surface of said endoscope cap comprises the step of inflating a balloon disposed between said endoscope cap and said surgical clip.

94. (New) The method of claim 86 wherein said step of deploying said surgical clip comprises the step of actuating a deployment device disposed on said endoscope cap wherein when said deployment device is actuated a distal end of an engagement member extends from said deployment device to engage said surgical clip and push said surgical clip off of said endoscope cap.

95. (New) The method of claim 94 wherein said step of actuating said deployment device comprises the step of releasing a compression spring.

96. (New) The method of claim 94 wherein said step of actuating said deployment device comprises the step of pressurizing a chamber contained within said deployment device.

97. (New) The method of claim 94 wherein said step of actuating said deployment device comprises the step of electrically moving said engagement member.

98. (New) The method of claim 86 further comprising the step of partially inflating a balloon disposed between said endoscope cap and said surgical clip, said partially inflated balloon having a diameter at a portion of said balloon which is located proximal to said surgical clip which is greater than a diameter of said surgical clip.

99. (New) The method of claim 86 further comprising the step of providing a foam member on said endoscope cap, said foam member having a diameter at a portion of said foam member which is located proximal to said surgical clip which is greater than a diameter of said surgical clip.

100. (New) The method of claim 86 further comprising the steps of:
- providing a cover over said surgical clip prior to the step of deploying the endoscopic device to the site within the patient's body; and
- retracting said cover from covering said surgical clip prior to the step of deploying said surgical clip from said outside surface of said endoscope cap.
101. (New) The method of claim 100 wherein said cover is an intubation overtube.
102. (New) The method of claim 86 wherein said surgical clip is in a martensite phase when said surgical clip is disposed on said outside surface of said endoscope cap and further including the step of heating said surgical clip to transform said surgical clip to an austenite phase after the step of deploying said surgical clip from said outside surface of said endoscope cap.
103. (New) The method of claim 102 wherein said step of heating said surgical clip comprises the step of supplying heated water to said surgical clip through a working channel of said endoscopic device.

104. (New) A surgical clip, the surgical clip deliverable at a site within a patient's body by an endoscopic device, comprising:

a plurality of grasping surfaces;

a plurality of joints connecting each one of said plurality of grasping surfaces;

and

wherein said grasping surfaces are movable between a tissue receiving position and a tissue grasping position and wherein when said grasping surfaces are in said tissue receiving position said grasping surfaces are adapted to be received on an outer surface of the endoscopic device.

105. (New) A surgical clip according to claim 104 wherein when said grasping surfaces are in said tissue receiving position said surgical clip stores an energy potential to force said grasping surfaces into said tissue grasping position.

106. (New) The surgical clip of claim 104 wherein when said first and second tissue grasping surfaces are in said tissue grasping position said first and second joints bias said first tissue grasping surface toward said second tissue grasping surface and wherein when said first and second tissue grasping surfaces are moved to said tissue receiving position by a force, said first and second joints store an energy potential within them, said energy potential returning said first grasping surface and said second grasping surface to said tissue grasping position upon removal of said force.

107. (New) The surgical clip of claim 104 wherein said first and second joints are formed integrally with said first and second tissue grasping surfaces.

108. (New) The surgical clip of claim 104 wherein each of said first and second joints include a semi-circular portion included between said respective first and second ends of said joints, said semi-circular portion extending toward said first and second elongated tissue grasping surfaces and wherein when said first and second joints are in said tissue receiving position said first end of each of said first and second joints contacts said respective second end of each of said first and second joints.

109. (New) The surgical clip of claim 104 wherein each of said first and second joints includes a compression spring disposed between said first end and said second end of said respective joint.

110. (New) The surgical clip of claim 104 wherein each of said first and second joints includes a torsion spring disposed between said first end and said second end of said respective joint.

111. (New) The surgical clip of claim 104 wherein each of said first and second joints include an elastomeric band disposed between said first end and said second end of said respective joint.

112. (New) The surgical clip of claim 104 further comprising a lock on a first side of said surgical clip.

113. (New) The surgical clip of claim 112, said lock including a pawl and a notch, said pawl releasably engageable with said notch.

114. (New) The surgical clip of claim 112, said lock including a slot defined by said first side of said surgical clip and a ball joint, said ball joint receivable within said slot.

115. (New) The surgical clip of claim 104 wherein each of said first and second joints include a cam-type hinge.

REMARKS

Applicants have canceled claims 1-49 without prejudice to or disclaimer of the subject matter contained therein. Applicants have added claims 50-115. Claims 50-115 are now pending.

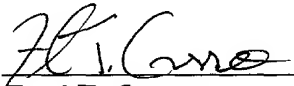
CONCLUSION

The Applicants respectfully request examination of these new claims. If for any reason the Examiner believes that contact with Applicant's attorney would advance prosecution, the Examiner is invited to contact the undersigned at the telephone number given below. The Examiner is invited to contact the undersigned at (202) 220-4311 to discuss any matter concerning this application.

The Office is authorized to charge any fees associated with this Amendment to Kenyon & Kenyon Deposit Account No. 11-0600.

Respectfully submitted,

Dated: September 21, 2001

By: 
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